Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 31 May 1961

FROM : [redacted] 25X1

SUBJECT: Trip Report - Contract 646, Task Order 4 and 15
Contract 605, Task Order 13

1. [redacted] was visited on 22, 23 May to facilitate the transfer of the CR-26 and ultra-violet communications projects to the undersigned. Present for discussions were: 25X1

[redacted] 25X1

In addition, a status report for the separate components of the CR-26 was presented by the cognizant project engineer.

2. Task 4 of Contract 646 is for the development of a solid state 1 to 10 kmc collection receiver, CR-26 which is continuously tunable, battery powered, pouchable, and weighs approximately 40 pounds. Design approaches to the preselectors, oscillator, mixer, and RF and IF amplifiers, if successful, definitely represent an advance in the state of the art. Garnet preselectors utilizing the magnetic precession rate of unmatched free-spin electrons in a doped garnet crystal when placed in a magnetic field and excited by the H field of a RF source at right angles to the fixed field seems to be the approach most likely to be successful in holding down the size and weight.

With the advent of Sylvania tunnel diodes operating up to 10 kmc the possibility of tunnel diode oscillator and mixer stages has become more realistic. A mechanically variable stripline oscillator using a 3.4 ma peak current diode was demonstrated. Tuning range was from 1820 to 2050 megacycles. Work is progressing on a 200 to 400 megacycle oscillator. A tunnel diode mixer would be ideal if a tunnel diode oscillator is used because the low power required for the mixer (approx 10 micro watts) would be well within the power output range (70 micro watts) of the oscillator.

SUBJECT: Trip Report - Contract 646, Task Order 4 and 15
Contract 605, Task Order 13

A six-stage 100 mc IF amplifier with a bandwidth of 30 mc and gain of 80 db has been built. The required bandwidth of 50 mc was not attained because of narrowing of the individual stage bandwidth when the stages were coupled together. The coupling and neutralizing circuits are being tested to determine the cause. A 50 mc bandwidth filter at 100 mc has been ordered from the Daven Company. Other filters will be ordered after this one and a 0.5 mc bandwidth filter at 15 mc have been tested.

Work on a 15 mc IF amplifier compatible with AM and FM reception continues. The main problem here is the capacity added by diodes used for limiting.

Consideration is still being given to RF amplification after the preselectors. However, the philosophy here seems to be that RF amplifiers, although desirable , are not necessary and any gain here is added insurance.

3. Task Order 15 of Contract 646 is being initiated with Texas Instruments for a study program on ultraviolet communications. Although the contract had not been processed as of the date of this visit, the contractor has made arrangements for a site on which to conduct experiments relative to the study. The site is very remote and affords a fair amount of security in that few, if any, people live or work in the vicinity. The possibility of using an army search light with a mechanically modulated gas tube as a source has been investigated and is deemed feasible. Actual work on the project will probably commence during the month of June.

4. [redacted] was also visited on Monday afternoon, 22 May to check the status of the miniature ten-watt antenna tuner for project [redacted] Decisions were made to dispense with the volume control on the noise generator and etching of switch positions on the side plates. Subsequent to this visit the tuner was delivered and integrated into project [redacted]

25X1
25X1
25X1
25X1

Distribution:
R&D Subject File 2/9
R&D Lab
SPS/CEN
Monthly (2)
EP Chrono